

What is claimed is:

1. A scanning optical system for emitting a plurality of beams scanning in a main scanning direction, comprising:

a first and a second light emitting devices each of which has a linear array of light emitting points;

a collimator lens system that collimates each of the plurality of beams emitted from the plurality of light emitting points of said first and second light emitting devices;

a first optical system that converges the plurality of beams emerged from said collimator lens system in an auxiliary scanning direction which is perpendicular to the main scanning direction;

a deflector that deflects the plurality of beams emerged from said first optical system to scan in the main scanning direction; and

a second optical system that converges the plurality of beams deflected by said deflector on a scan target surface to form a plurality of beam spots scanning in the main scanning direction,

wherein said first optical system forms a plurality of line-like images in the vicinity of said deflector,

wherein said first and second light emitting devices are positioned such that the linear array of light emitting

points of each of said first and second light emitting devices is aligned in parallel with the auxiliary scanning direction and that the beam spots formed by the plurality of beams emitted by said first light emitting device and the beam spots formed by the plurality of beams emitted by said second light emitting devices are alternately arranged on the scan target surface in the auxiliary scanning direction.

2. The scanning optical system according to claim 1, wherein an incident angle of each beam emitted by said first light emitting device and an incident angle of each beam emitted by said second light emitting device with respect to said deflector are different from each other in a plane perpendicular to the auxiliary scanning direction.

3. The scanning optical system according to claim 1, wherein said first optical system includes:
a first cylindrical lens having optical power in the auxiliary scanning direction; and
a second cylindrical lens having optical power in the auxiliary scanning direction,
wherein the first cylindrical lens is located on a light emitting device side and the second cylindrical lens is located on a deflector side.

4. The scanning optical system according to claim 3, wherein said first cylindrical lens has negative power, and said second cylindrical lens has positive power.

5. The scanning optical system according to claim 4, wherein said second cylindrical lens satisfies a condition:

$$-1.2 < m_{cL2} < -0.8$$

where m_{cL2} represents a magnification of said second cylindrical lens in the auxiliary scanning direction.

6. The scanning optical system according to claim 3, wherein each beam emitted by said first light emitting device and each beam emitted by said second light emitting device pass through said first optical system at different positions in the main scanning direction,

wherein an angle of inclination of at least one of said first cylindrical lens and said second cylindrical lens with respect to an optical axis of said collimator lens system in a plane perpendicular to the auxiliary scanning direction is adjustable so that a magnification of said scanning optical system in the auxiliary scanning direction with respect to the light emitting points of said first light emitting device and a magnification of said

scanning optical system in the auxiliary scanning direction with respect to the light emitting points of said second light emitting device can be adjusted to values different from each other.

7. The scanning optical system according to claim 6, wherein a position of at least one of said first cylindrical lens and said second cylindrical lens along an optical axis thereof is adjustable.

8. The scanning optical system according to claim 1, further comprising a supporting unit that supports said first and second cylindrical lenses at both ends of each of said first and second cylindrical lenses in the main scanning direction such that a position of each of said first and second cylindrical lenses along an optical axis of said collimator lens system can be adjusted, said supporting unit being fixed in said scanning optical system.

9. The scanning optical system according to claim 1, further comprising:

a frame to which said first light emitting device, said second light emitting device, said collimator lens system, said first optical system, said deflector, and said second optical system are fixed; and

a supporting unit that supports said first and second cylindrical lenses at both ends of each of said first and second cylindrical lenses in the main scanning direction such that an angle of inclination of each of said first and second cylindrical lenses with respect to an optical axis of said collimator lens system in a plane perpendicular to the auxiliary scanning direction can be adjusted, said supporting unit being fixed to said frame.

10. The scanning optical system according to claim 1, wherein each of said first and second light emitting devices is a semiconductor laser array.

11. The scanning optical system according to claim 1, wherein said first light emitting device and said second light emitting device are shifted from each other by a shift amount which is $1/2$ of a pitch of adjacent light emitting points of each of said first and second light emitting devices in the auxiliary scanning direction.